Internship Opportunity: Research Assistant, Virginia Development Vulnerability Model

Project Lead: Dr. Kirsten Hazler, Landscape Ecologist, Virginia Department of Conservation and Recreation, Division of Natural Heritage (DCR-DNH)

General Description:

To make prudent conservation decisions and acquisitions with limited resources, it is necessary to know not only which natural areas are most pristine, rare, and valuable from an ecological perspective, but also their relative vulnerability to development. Knowing which areas are most likely to succumb to development pressure will help conservationists strategically target the areas of greatest conservation value for biodiversity and other ecosystem services.

DCR-DNH (www.dcr.virginia.gov/natural_heritage) is tasked with developing a new statewide development vulnerability (urban growth) model to replace an earlier version that is now out of date. We are offering internship opportunities to assist with various aspects of model development. The specific tasks to be accomplished by each intern may vary depending on the stage of the project when the internship commences, as well as on the intern's particular experience, skills, and interests. Training for specific tasks will be provided as needed.

Location: It is expected that most work will be conducted at the student's campus. Regular meetings with the project lead will be required, which may be conducted at DCR-DNH or on campus.

Time Frame: A summer schedule is anticipated with flexible start and end dates, and with a minimum commitment of 8 weeks, full-time.

Description of Duties (may vary depending on time frame and intern's previous experience):

- Gather, organize, and process various spatial data layers
- Document processed geospatial data with metadata
- Collect primary literature sources, and enter into bibliographic database
- Select and download Landsat imagery according to specifications; visually scan for quality control
- Build spectral libraries from Landsat image series
- Identify temporally stable locations to be used for spectral normalization of images between years
- Prepare spectral profile plots for signature comparison and analysis
- Create mask layers identifying clouds, cloud shadows, and water in Landsat imagery
- Conduct image classification and land cover change analyses
- Use heads-up digitizing of high-resolution imagery to delineate different land cover types at sample locations
- Create and/or modify ArcGIS models and custom ArcGIS tools
- Test and de-bug Python and R code
- Run statistical analyses
- Assist with report-writing

Knowledge and Skills:

- General interest in and knowledge of environmental conservation issues
- General facility with Windows computers and MS Office or similar software
- Good organizational and problem-solving skills
- Good verbal and written communication skills
- Ability to follow protocols and work independently
- Experience with ArcGIS, ENVI, or other GIS and image processing software
- Experience with Python, IDL, R, or other programming language preferred

- Experience conducting statistical analyses preferred

Compensation: Due to budget constraints, salary or stipend may not be available. However, students are encouraged to seek fellowship funding and/or college credit through their institutions to support their work on the project.

Application Procedure: Submit a cover letter and resume as email attachments to kirsten.hazler@dcr.virginia.gov. Include the names and contact information for at least two references. Also indicate the time frame (proposed start/end dates) in which you would like to work. **Important:** If you are applying for research fellowship funding through your college or university, you should send your materials to Dr. Hazler at least two weeks before that application deadline, so that DCR-DNH can make sure that your application is competitive and outlines the specific tasks you would undertake for the fellowship period.